

REMARKS

At the time the present Office Action issued, claims 1 to 21 were pending.

Specification

In Numbered paragraph 1 of the Office Action, the specification has been objected to as failing to provide proper antecedent basis for the claimed subject matter set forth in claims 16 and 17.

This objection has been overcome by inserting a new paragraph on page 3 of the specification based on the subject matter of claims 16 and 17. No new matter has been added.

In addition, Attorney for Applicant wishes to make use of the opportunity to correct minor errors in the reference numeral '28' on page 11 lines 31 and 32 of the application. It is clear from the same paragraph that reference numeral '28' corresponds to ferrite bars while reference numeral '29' is used for the separation wall (see line 24 to 25). Thus, reference numeral '28' has been replaced by '29' where it is intended to identify the separation wall.

Claim amendments to overcome objections

In Numbered paragraph 2 of the Office Action, claims 6 and 17 have been objected to because of specified informalities. To overcome these objections, claims 6 and 17 have been amended.

The word "the" has been deleted from the last line of Claim 6, as requested.

In Claim 17, the spelling of the word "hydrite" has been corrected to "hydride".

In addition, Claim 11 has been amended to correct some informalities that may have escaped attention. The word "are" before the word "arranged" has been deleted, the word "and" has been replaced by "whereby", and the word "pipe" has been inserted after the term "the enveloping" in order to correspond to the antecedent basis provided earlier in the claim.

None of these amendments constitute addition of new matter.

Claim amendments to overcome rejections under 35 USC § 112

In Numbered paragraph 3 of the Office Action, claims 1 to 12 have been rejected under 35 USC § 112, second paragraph. In order to overcome these rejections, the following amendments have been made:

In Claim 19, the term “the forge welded” has been corrected to “the forge weld” so as to correspond to the antecedent basis provided earlier in Claim 1.

In Claim 1, antecedent basis has furthermore been introduced for the terms “tubular end”, “wall”, “heated tubular ends”, and “interconnected tubulars”. The term “the tubular segment” has been replaced by “a tubular segment” to accommodate antecedent basis. These amendments together overcome the rejections of claims 1 to 20 stated in the Office Action.

The rejection of Claim 21 has been overcome by replacing the term “the heating phase” with “the heating of each tubular end” for which antecedent basis is present in Claim 1.

None of the amendments constitutes an addition of matter.

Other claim amendments

Although not specifically indicated in the Office Action, antecedent basis has been introduced in Claim 1 for the term “electrical contacts” which term appeared in the claims.

The term “the method” in the first line of Claim 20 has been replaced by “a method”.

Part of the subject matter from Claim 17 (“the liquid or solid reducing agent comprises a cleaning liquid, such as hydrochloric acid”) has been moved from claim 17 to new claims 23 and 24.

A new Claim 22 has been introduced, based on subject matter from Claim 14.

The amendments do not constitute any addition of new matter.

Allowable subject matter

In Numbered paragraph 9, claims 7 to 12 and claims 16-17 have been held to be allowable if rewritten to overcome the §112 rejections and to include all of the limitations of the base claim and intervening claims. The Examiner is cordially thanked for having acknowledged the potential allowability of these claims.

The Applicant agrees, and therefore Claim 7 has been rewritten in independent form as requested, by adding the subject matter of currently amended claim 1. It is thus submitted that currently amended Claim 7 is in an allowable condition. Claims 8 to 12 each are dependent on Claim 7, so that also these claims are allowable.

Also Claim 16 has been rewritten in independent form as requested, by adding the subject matter of currently amended Claim 1. Claim 17 and new claim 22 are dependent on claim 16. Hence, claims 16, 17, and 22 are presently in an allowable condition.

Claim rejections under 35 USC § 103

Claims 1-6, 18, 20 and 21

In Numbered paragraphs 4 to 6 of the present Office Action, claims 1-6, 18, 20 and 21 have been rejected under 35 USC § 103(a) as being unpatentable over Moe (US Pat. 4,736,084) in view of Brennan *et al.* (US Pat. 5,347,101).

The rejection states that Moe teaches a method for joining two tubular elements (1,2) by forge welding, comprising: arranging the tubular elements that are to be joined at a selected distance from each other in a space by gripping means, providing a flushing fluid mixture; heating each tubular end within said space by means of high frequency electrical heating source (11) through pairs of contact (6,7 and 8,9) arranged by clamping at circumferentially spaced intervals and diametrically opposite position against the wall of each tubular end such that the contacts transmit a high frequency electrical current through a substantially circumferential direction of tubular segment between the electrical contact and pressing the tubular ends towards each other until a forge weld is formed between the heated tubular ends (abstract, figures 1 and 2, and column 2, line 9 – column 4 line 21).

It is then acknowledged that Moe does not teach using at least three electrodes as the means of heating the tubular elements to be joined by forging.

The rejection then continues that Brennan *et al* teaches a welding method of welding offshore pipelines (5) by heating the pipe segments with high frequency electrical heating source through at least three pairs of electrodes (50) that are pressed on the circumferentially boundary defined by the pipe segments; wherein the electrodes are mounted approximately 60° apart from each other in order to ensure uniform heating (emphasis added).

The rejection then states that it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have modified the forging

method of Moe to include at least three pairs of electrode circumferentially spaced intervals in view of the teachings of Brennan *et al.* in order to ensure uniform heating (see Brennan *et al.*, abstract, and column 3, lines 5-19)(emphasis added).

Attorney for Applicant respectfully traverses the rejections.

First of all, it is remarked that the Examiner's allegation that Brennan *et al* teaches ensuring uniform heating does not find support in the cited art. The lines cited by the Examiner (Col. 9 lines 9-19) don't discuss uniformity of heating, nor any other lines in Brennan *et al*.

This takes away a crucial element in the argument on which the rejection was based, without which no *prima facie* case of obviousness has been established.

When reading the art, without taking benefit of hindsight having knowledge of the applicant's disclosure, there is no suggestion or motivation in the cited references to modify the teaching of Moe or to combine the teachings.

Moe relates to a new methodology of welding whereby the elements that are to be joined are heated by high-frequency resistance heating. The presence of a narrow gap between the elements to be joined is essential in Moe, as that is said to cause the current to follow the material close to the gap surface thereby establishing a narrow heating zone in the vicinity of the gap surfaces. Consequently, it is important that the gap surfaces are positioned close to each other, but without being in physical contact with each other. (Moe, Col. 2 lines 33-36). Moe requires the full gap surfaces to be heated, which is established by the specific conductive properties associated with the gap. Only after the full gap surface is heated, the elements are brought into contact with each other to establish the full weld at once.

Brennan *et al* disclose a method of arc welding. There are so many requirements in arc welding different from those of Moe's high frequency welding that these teachings cannot be combined in a meaningful way.

For instance, in contrast to Moe, who uses high frequency resistance heating to heat the entire surface to be joined, Brennan *et al* employ welding heads that produce the intense heat needed to melt metal very locally in the vicinity of the weld head. This causes the work piece to melt locally in a crater, which solidifies behind the weld head as it is moved along the joint. This is confirmed in, for instance, Figs. 5 and 6 of Brennan *et al.*, wherein the weld **9** has been depicted as individual solidified areas left behind in the track of the weld head **50**. The weld **9** does not extend to the seam ahead of the weld head **50**.

Thus, Brennan *et al* require a very local heating in combination with tracking (which is the reason that Brennan *et al* requires a seam tracking system), which is quite the opposite from the uniform heating as Moe requires. As already stated above, and in contradiction to Examiner's statement, Brennan *et al* contains no specific disclosure at all on improving uniformity of the heating. And for good reason: Brennan *et al* would not work with uniform heating.

So the motivation on which the obviousness rejection as set forth in Numbered paragraph 6 relies to combine the teachings of Moe and Brennan *et al* is not supported by the art. Thus, no *prima facie* case of obviousness has been established and for this reason the rejection as presently stated must be withdrawn.

Applicant further believes that no *prima facie* case of obviousness can be established based on Moe and Brennan *et al*. Firstly, Brennan *et al* don't specifically disclose any reason for having welding heads at 60° circumferential spacing. Thus, motivation to combine the references would not be based on the cited art.

Moreover, the work pieces in Brennan *et al* are in close contact with each other during the repetitive heating up and melting under the welding heads. This teaches away from the requirement of Moe to have a gap between the tubular ends present, so that the skilled artisan would even be taught not to combine the references.

In conclusion, the Examiner has not established a *prima facie* case of obviousness against the claims 1-6, 18, 20 and 21 and for this reason withdrawal of the rejections is kindly requested.

Claims 13-15

In Numbered paragraph 7 of the Office Action, claims 13-15 have been rejected under 35 USC § 103(a) as being unpatentable over Moe in view of Brennan *et al*. as applied to Claim 1 above, and further in view of Flood *et al*. (US Pat. 5,686,002).

Attorney for Applicant respectfully traverses the rejections.

Claims 13 to 15 depend on Claim 1. It has been shown above that no *prima facie* case of obviousness has been established regarding claim 1 on the basis of Moe in view of Brennan *et al*.

The additional consideration of Flood *et al*. does not bring a *prima facie* case of obviousness against Claim 1 either, since it does not disclose three or more electrodes.

As the combination of Moe, Brennan *et al*, and Flood *et al* does not establish a *prima facie* case of obviousness against Claim 1, it does also not establish the *prima facie* case against Claims 13 to 15 either, for these claims contain the subject matter of Claim 1.

Therefore, withdrawal of these rejections is respectfully requested.

Claim 19

In Numbered paragraph 8 of the Office Action, claim 19 has been rejected under 35 USC § 103(a) as being unpatentable over Moe in view of Brennan *et al.* as applied to Claim 1 above, and further in view of Schaps *et al.* (US Pat. 5,652,389).

Attorney for Applicant respectfully traverses the rejections.

Claim 19 depends on Claim 1. It has been shown above that no *prima facie* case of obviousness has been established regarding claim 1 on the basis of Moe in view of Brennan *et al.*.

The additional consideration of Schaps *et al.* does not bring a *prima facie* case of obviousness against Claim 1 either, since it does not disclose a welding tool, let alone three or more electrodes for welding.

As the combination of Moe, Brennan *et al.*, and Schaps *et al.* does not establish a *prima facie* case of obviousness against Claim 1, it does also not establish the case against Claim 19, for this claim contains the subject matter of Claim 1.

Therefore, withdrawal of these rejections is respectfully requested.

Concluding remarks

Numbered paragraph 10 of the Office Action states prior art made of record but not relied upon. Applicant will not comment on these references before they are actually applied to one or more of the claims.

In conclusion, Attorney has thus addressed each and every ground for objection and rejection raised by the Examiner in the Office Action.

Attorney respectfully submits that the specification, drawings, and claims – new and amended – are now in a state ready for allowance.

In the event the Examiner has any questions or issues regarding the present application, the Examiner is invited to call the undersigned prior to the issuance of any written action.

Respectfully submitted,

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